37. *Pelomys fallax*, Peters.

♀. 167, 168, 170. Kalungwisi River.

38. *Georychus mellandi*, Thos.

♂. 119. Chambezi Valley.

39. *Georychus amatus*, Wrought.

♂. 114, 116; ♀. 115, 117. Chambezi Valley.
♂. 134. Edge of Chimpili Plateau.
♂. 148, 149. Lofu River, south of Lake Tanganyika.

XXVI.—*On Two new Species of Wood-boring Crustacea from Christmas Island.* By W. T. Calman, D.Sc.

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[Plate V.]

Among the Crustacea collected by Dr. C. W. Andrews, F.R.S., on his visit to Christmas Island in 1908, and presented to the British Museum by Sir John Murray, K.C.B., F.R.S., are two species, an Amphipod and an Isopod, which were found boring into the piles of the pier at Flying-Fish Cove. It is worthy of note that, although both species are apparently undescribed, they belong to the same genera, *Chelura* and *Limnoria*, as the two species that are associated together in destroying submarine timber on our own coasts.

The aberrant Amphipod family Cheluridæ has hitherto comprised only a single species, the well-known *Chelura terebrans* of the North Atlantic and adjoining seas, and the discovery of a second species in the Indian Ocean is therefore of some interest.

Of the Isopod genus *Limnoria* five species have already been described. *L. pfefferi*, Stebbing, the only one known in tropical seas, comes from the island of Minikoi, but it appears to be very distinct from the species described below.

Order AMPHIPODA.

Suborder Gammaridea.

Family Cheluridæ.

All necessary references to the literature of the family and of its type species will be found in Mr. Stebbing's invaluable

revision of the Gammaridea ('Das Tierreich,' Lief. 21, 1906, p. 693). Some modification of the definitions given in that work is necessary to admit the species described below. In the definition of the family the words "Pleopods with peduncle produced on the inner side" must be omitted. In that of the genus "pleon segments 1 and 2 very short" and "antenna 1 short" are no longer applicable; the inner plate of "maxilla 1" may have nine setæ and that of "maxilla 2" four setæ on the inner margin; the "2nd joint little expanded" does apply to the fifth peræopods, and the inner ramus of "uropod 3" is absent in the new species.

Chelura insulæ, sp. n. (Pl. V. figs. 1–6.)

Description of ovigerous female.—Length of body about 5 mm.; greatest breadth about ·9 mm.

General form of the body (fig. 1) more slender than in *C. terebrans*, the dorsal surface with more numerous scattered setæ. Third pleon somite with three subequal tubercles on its hind margin (fig. 2); the following segment (fourth to sixth somites fused) about one-fifth of total length of body. Fifth and sixth side-plates with very small anterior lobe.

Antennule (fig. 1) nearly two-fifths as long as body; flagellum sparsely setose, little longer than last segment of peduncle, with five segments; accessory flagellum unsegmented, about half as long as first segment of flagellum.

Antenna (fig. 1) about half as long as body; last segment of peduncle subequal to penultimate and longer than antepenultimate, less densely setose than the flagellum; flagellum more than three times as long as broad, with indications of segmentation becoming more distinct distally.

Mouth-parts closely resembling those of *C. terebrans*, but the mandibular palp is longer and has a relatively larger proximal segment with a group of setæ at its distal end; inner plate of maxillula broader, with about nine setæ; inner plate of maxilla with four setæ below the longer one which marks the distal limit of the inner edge.

First gnathopods (fig. 3) very large, about two-fifths of length of body; breadth of propodus (palm) two-thirds of its length, palmar edge sloping backwards to about half the length of the propodus, irregularly dentate and defined by a strong tooth; dactylus stout, longer than the palmar edge. Second gnathopods (fig. 4) slender; carpus about as long as propodus, the latter about four times as long as broad, narrowing distally, minutely subchelate; all the segments carrying numerous very long setæ. Peræopods (fig. 1) with

the basipodites much more expanded than in *C. terebrans*, that of the last pair about two-thirds as broad as long; distal segments of last three pairs flattened, the propodus with a row of strong spines on its hinder edge.

Pleopods (fig. 5) with the peduncle flattened, but not produced on the inner side. First uropods (fig. 1) with peduncle nearly three times as long as endopod, which is about one-third longer but not broader than the exopod; both rami armed with stout spines. Peduncle of second uropods (figs. 1 & 2) nearly twice as long as broad, its strongly serrated upper (or outer) edge only slightly curved, not produced as in *C. terebrans* into a rounded lobe. Third uropods (figs. 1 & 2) uniramous, the endopod wanting; exopod about twice as long as broad.

Telson (fig. 2) slightly concave, not noticeably carinate, on the dorsal surface, its breadth two-thirds of its length, with a few serrations at the acute point.

The eggs are large (about ·6 mm. in length) and not more than three were found together in the marsupium. Some ovigerous individuals were found of which the body-length did not much exceed 3 mm., and in each of these the marsupium contained only a single egg. In a small series of *C. terebrans* examined for the purpose of comparison the number of eggs carried by a single female varied from three to eight.

Adult male (fig. 6).—Length of body about 7 mm.; greatest breadth about 1·1 mm.

Third pleon somite with median tubercle more acute but no larger than in female; lateral tubercles broadened, with deeply concave posterior margin and prominent corners. Proportions of antennules and antennæ much as in female except that the antennal flagellum is more than four times as long as broad.

First gnathopods (fig. 6) larger than in female, about three-sevenths of length of body; propodus (palm) very massive, with two large unequal teeth about the middle of its palmar edge.

Peduncle of second uropods (fig. 6) more than twice as long as wide, the setæ on its upper edge longer and more numerous than in the female. Exopod of third uropods (fig. 6) three times as long as broad, with a thick brush of very long setæ on its lower surface.

Remarks. — Of the numerous characters in which this species differs from *C. terebrans* the great size of the anterior gnathopods, the reduction of the median tooth on the third pleon segment, the much longer antennules and antennæ, and

the brush of hairs on the third uropods of the male are the most conspicuous. The first of these and the absence of the endopod of the third uropods are characters equivalent to some that are used in other families of Gammaridea for the separation of genera ; but there is as yet no necessity to give them generic value in this case.

Order ISOPODA.

Suborder FLABELLIFERA.

Family **Sphæromidæ.**

I follow Hansen (Quart. Journ. Micr. Sci. (n. s.) xlix. p. 98, 1905) in placing *Limnoria* in a subfamily, Limnoriinæ, of the Sphæromidæ instead of in a separate family. A trivial modification in Hansen's definition of the subfamily is required by the fact that the fifth pair of pleopods in the new species are not entirely without marginal setæ.

Limnoria andrewsi, sp. n. (Pl. V. figs. 7–14.)

Description of female (*not ovigerous*).—Length of body when straightened out about 2·0 mm. ; breadth ·65 mm.

General form of body (fig. 7) narrower than in *L. lignorum* or *L. pfefferi*. The first free thoracic somite has only a shallow transverse depression dorsally. The fifth abdominal somite is almost as long, in the middle line, as the telsonic segment ; the latter has a slight median elevation, indistinctly bilobed, anteriorly, and its posterior margin is less evenly rounded than in *L. lignorum* and *L. pfefferi*. The whole dorsal surface is beset with short setæ.

The antennules (fig. 8) have the second segment nearly twice as long as broad and longer than the third. A minute nodule (marked * in figure) bearing two setæ on the distal end of the third segment may perhaps represent a vestige of the accessory (inner) flagellum. In the antennæ (fig. 9) the last segment of the peduncle is nearly twice as long as the preceding.

The palp of the mandible (fig. 10) is more slender than in any of the described species ; the second segment about one-third longer than the first and nearly three times as long as the third.

The epipod of the maxilliped (fig. 11) extends as far as the distal end of the ischium ; it is about three times as long as wide, with a bluntly pointed apex.

The first gnathopod (fig. 12) resembles that of *L. lig-*

norum, but the accessory spine on the inner side of the dactylus (fig. 13) is tridentate and there is a large spine with a single row of comb-like teeth springing from the distal end of the propodus in addition to the smaller doubly pectinate spine present in *L. lignorum*. In the succeeding limbs the accessory spine is simple and there are no pectinate spines on the propodus. None of the thoracic limbs have the distal segments provided with tubercles or blunt spines. The last pair are less elongated than in *L. lignorum* or *L. pfefferi*.

The endopod of the pleopods is narrowly oblong only in the first pair; in the following pairs it becomes wider than the exopod, and in the last pair, where the exopod is devoid of setæ, the endopod has two short plumose setæ on its distal edge.

The exopod of the uropods (fig. 14) without its terminal spine is about as long as the outer edge of the peduncle, and the endopod is about half as long again; both rami are slightly curved.

The dorsal surface is coloured by a varying amount of black pigment forming an elegant and complex pattern.

There are no ovigerous specimens in the collection and none of those dissected proved to be males.

Remarks.—Mr. Stebbing gave, in 1904 (Gardiner's 'Fauna Maldive and Laccadive Archip.' ii. (3) p. 714), a key to the four species of *Limnoria* then known. The species described above falls into the third section of this key, having the epipod of the maxillipeds longer than the basis, the exopodite of the uropods not unguiform, and the rami of the uropods not both very small. The two species in this section are *L. segnis*, Chilton, and *L. pfefferi*, Stebbing; from the first of these the present species differs in having the mandibular palp well developed and consisting of three segments; from the second it differs in having the epipod of the maxillipeds much more than twice as long as wide. From all four species it is separated by the shortness of the peduncle of the uropods, which does not exceed the exopod in length; in all the other species it exceeds the exopod and in *L. antarctica* and *L. pfefferi* it is longer than the endopod.

So far as I am aware, the only species added to the genus since the date of Mr. Stebbing's paper is *L. japonica*, described by Miss Richardson (Proc. U.S. Nat. Mus. xxxvii. p. 95, 1909). This species is characterized chiefly by the presence of tubercles and ridges on the posterior part of the body; the exopod of the uropods appears to be unguiform as in *L. lignorum*, but no details are given as to the maxillipeds. A point of some general interest is the presence on the antennule

of the new species of what may be a vestige of the inner flagellum. The only Isopoda in which any trace of this flagellum has been found hitherto are the gigantic *Bathynomus* and the cryptoniscan larvæ of some Epicaridea.

EXPLANATION OF PLATE V.

Fig. 1. *Chelura insulæ*, ovigerous female, from the side.
Fig. 2. Ditto. Posterior part of body, from above.
Fig. 3. „ Gnathopod of first pair.
Fig. 4. „ Gnathopod of second pair.
Fig. 5. „ Pleopod of second pair.
Fig. 6. „ Adult male, from the side.
Fig. 7. *Limnoria andrewsi*, female, from above.
Fig. 8. Ditto. Antennule. * Supposed vestige of inner flagellum.
Fig. 9. „ Antennæ.
Fig. 10. „ Mandible.
Fig. 11. „ Maxilliped.
Fig. 12. „ Gnathopod of first pair.
Fig. 13. „ Terminal part of same, further enlarged.
Fig. 14. „ Uropod.

XXVII.—*Notes on the Choanoflagellate Genera* Salpingœca *and* Polycœca, *with Description of* Polycœca dumosa, *sp. n.*

By J. S. Dunkerly, B.Sc., Assistant in Zoology Department, Birkbeck College, London.

[Plates VI. & VII.]

The Choanoflagellata have been little studied of late, and after observing several freshwater forms, I spent a month of 1909 at the Plymouth Biological Station, in order to obtain some knowledge of the marine members of the family. I should like here to express my sincere thanks to the British Association for the Advancement of Science for permission to use their table, and also to the staff of the Laboratory for their kind assistance. My work on these forms has received the kindest encouragement and assistance from Professor Minchin, who has allowed me to work at the Lister Institute.

Salpingœca.

Salpingœca was established as a genus by James Clark (1), and Saville Kent discovered a large number of different forms. That all of Saville Kent's so-called species are truly such is more than doubtful: *e. g.*, Francé has pointed out that Kent's figures of *Monosiga ovata* (2, pl. II. fig. 33) and *M. consociata*